

REMARKS/ARGUMENTS

Favorable reconsideration of this application is requested in view of the following remarks and discussion.

Claims 1, 3-10, 12, and 15-18 are pending. No claims are amended or newly added. Claims 2, 11, 13, and 14 were canceled previously. No new matter is added.

In the outstanding Office Action, Claim 17 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 1, 8-10, and 15-18 were rejected under 35 U.S.C. § 102(a) as anticipated by Kawano et al. (U.S. Patent No. 6,881,058, herein "Kawano"). Claims 3-6 and 12 were rejected under 35 U.S.C. § 103(a) as obvious over Kawano in view of Fukunaga et al. (U.S. Patent No. 6,743,395, herein "Fukunaga").

Regarding the rejection of Claim 17 under 35 U.S.C. § 112, first paragraph, as reciting matter not supported in the specification, that rejection is respectfully traversed by the present response.

Dependent Claim 17 recites:

The heat processing apparatus as set forth in claim 1,  
further comprising a heater, different than the heating means,  
disposed in the frame member.

Accordingly, the apparatus includes two separate heaters; a heater and a heating means for heating the heating plate.

Applicants respectfully submit that the above-noted feature is fully supported by the original specification. For example, numbered paragraph [0078] of the published application states:

[0078] In addition, according to the present embodiment, as shown in FIG. 13, a heater 91 as a heating mechanism composed of a resistor heating member may be disposed in a frame member 5E. The temperature of the heater 91 may be varied by a controlling portion (not shown in FIG. 13) in accordance with the processing temperature and processing

time for the substrate G. The amount of heat radiated from the substrate G is varied in accordance with the temperature of the frame member 5E. Thus, when the temperature of the frame member 5E is optimally adjusted at timings of which the temperature of the substrate G is increasing, decreasing, and constant, the amount of heat radiated from the substrate G is optimally controlled. As a result, the temperature uniformity of the surface of the substrate can be improved.<sup>1</sup>

Additionally, the specification describes one example of the heating means recited in independent Claim 1 in numbered paragraph [0057], which states:

[0057] The heating plate 4 has an inner heater 42 that is a heating means. The heater 42 heats a substrate G at around 100°C to 250°C. For example, as shown in FIG. 6, the heater 42 is composed of three heaters 42a, 42b, and 42c. The heater 42a is a circular plane heater 42a. The heaters 42b and 42c are disposed in a concentric circle shape. The heater 42a is surrounded by the heaters 42b and 42c. The heaters 42a, 42b, and 42c are disposed in such a manner that not only a region on which the substrate G is placed, but all the surfaces of the heating plate 4 can be fully heated. In this example, the ring-shaped heaters 42b and 42c are disposed outside the region on which the substrate G is placed. It should be noted that the number and shape of heaters 42 are not limited to those of the example. In addition, the plane heater 42a may be formed in a square shape. The ring-shaped heaters 42b and 42c may be formed in a square ring shape. The number of ring-shaped heaters may be increased or decreased. Alternatively, the substrate G may be heated by a plurality of ring-shaped heaters without use of a plane heater.<sup>2</sup>

Accordingly, the inner heater (42) is one example of the heating means recited in independent Claim 1, and the heater (91) is an example of the heater disposed in the frame member recited in dependent Claim 17. Thus, the original specification describes two separate heaters as recited in Claim 17. Accordingly, Applicants respectfully submit that features of dependent Claim 17 are fully supported by the originally filed application.

Regarding the rejection of Claims 1, 8-10, and 15-18 as anticipated by Kawano, that rejection is respectfully traversed by the present response.

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<sup>1</sup> This section corresponds to the originally filed specification, page 31, lines 5-8.

<sup>2</sup> Originally filed specification, page 18, lines 8-12.

Independent Claim 1 recites, in part:

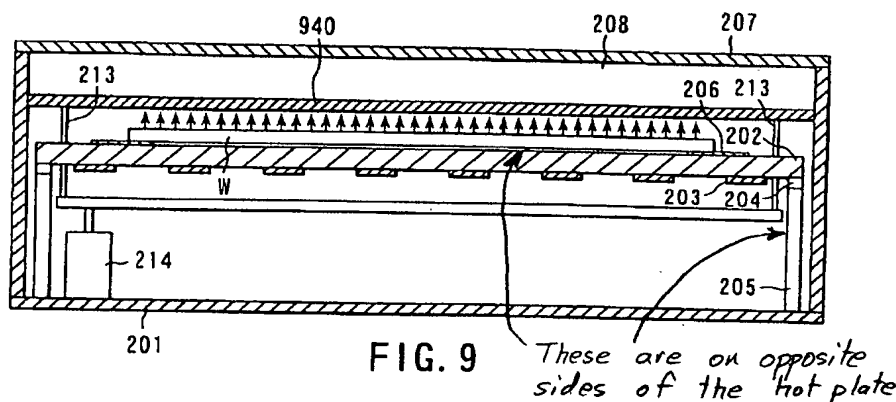
a heating plate for heating the mask substrate, the mask substrate disposed on a first side of the heating plate and including a front surface and a side surface;

heating means for heating the heating plate; and

a frame member disposed on the first side of the heating plate so as to overlap the heating means as viewed from the first side, having an inner peripheral surface and a first clearance between the inner peripheral surface and the side surface, being detachably disposed to the heating plate so that the frame member is disposed around the mask substrate.

Accordingly, the heating plate has a first side on which a mask substrate is disposed. A frame member is also disposed on the first side of the heating plate. The frame member overlaps the heating means for heating the heating plate as viewed from the first side. The frame member is detachably disposed to the heating plate around the mask substrate.

In contrast, Kawano describes a hot plate (202) supported by a frame (205).<sup>3</sup> The frame (205) supports the hot plate (202) via an insulator (204). As shown in Figs. 2, 7, 9, 10, 11, 12, and 14-17, the frame (205) and insulator (204) are disposed on a bottom side of the hot plate (202). The wafer (W) is disposed on a top surface of the hot plate (202). Fig. 9 below shows this arrangement clearly.



As shown in Fig. 9, the wafer is disposed on an opposite side of the hot plate (202) from the frame (205), which is relied on in the outstanding Office Action for the feature of a

<sup>3</sup> Kawano, col. 6, line 32.

frame member as recited in independent Claim 1. Therefore, Kawano fails to teach or suggest a mask substrate disposed on a first side of a heating plate and a frame member disposed on the first side of a heating plate as recited in independent Claim 1. Accordingly, Applicants respectfully submit that independent Claim 1 and Claims 4, 10, and 15-28 depending therefrom patentably distinguish over Kawano for at least the reasons discussed above.

Regarding the rejection of Claim 7 as anticipated by Kawano, that rejection is respectfully traversed by the present response.

Independent Claim 7 recites, in part:

a frame member, having an inner peripheral surface and a first clearance between the inner peripheral surface and the side surface, being detachably disposed to the heating plate so that the frame member is disposed around the mask substrate further comprising:

a driving mechanism configured to move the frame member so that a distance between the frame member and the side surface of the mask substrate placed on the heating plate varies in a direction perpendicular to the side surface.

Accordingly, a driving mechanism is configured to move the frame member to change a distance between the frame member and the side surface of the mask substrate placed on the heating plate in a direction **perpendicular to the side surface**.

In contrast, Figs. 2, 7, 9, 10, 11, 12, and 14-17 make clear that the item relied on in the outstanding Office Action for a frame member, frame (205), **does not change distance with respect to the wafer (W)**, much less change distance in a direction perpendicular to a side surface of the wafer (W) as recited in independent Claim 7. Rather, the frame (205) is always connected to the hot plate (202) via the insulator (204). As the wafer (W) is disposed on the hot plate (202) via the spacers (206), which do not move relative to the hot plate (202), no change in distance occurs between the wafer (W) and the frame (205). Accordingly,

Applicants respectfully submit that independent Claim 7 and Claims 8 and 9 depending therefrom patentably distinguish over Kawano for at least the reasons discussed above.

Regarding the rejection of Claims 3, 5, 6, and 12 as obvious over Kawano in view of Fukunaga, that rejection is respectfully traversed by the present response.

As discussed above, independent Claim 1 patentably distinguishes over Kawano. The outstanding Office Action relies on Fukunaga for the specific interior shape of the frame member.<sup>4</sup> The outstanding Office Action relies on the "cup-shaped scattering preventive plate" (162) for the feature of the frame member with convex, concave, and mirrored or rough surfaces as recited in dependent Claims 3-6.<sup>5</sup> However, the cup-shaped scattering preventive plate (162) is not a frame disposed on a heating plate, much less a frame disposed to a heating plate on a same side of the heating plate as a mask substrate as recited in independent Claim 1.

In fact, Fukunaga relates to a process of producing ultrafine particles, and a person of ordinary skill in the art would not look to Fukunaga to remedy the deficiencies of the semiconductor substrate processing apparatus described in Kawano.

Accordingly, Fukunaga fails to remedy the deficiencies discussed above regarding Kawano in reference to Claim 1. Therefore, Applicants respectfully submit that no reasonable combination of the cited references would include all of the features recited in independent Claim 1, and Claims 3-6 and 12 patentably distinguish over any proper combination of Kawano and Fukunaga.

Additionally, Applicants respectfully submit that Fukunaga is silent with regard to a surface finish of the cup-shaped scattering preventive plate (162), and therefore fails to teach or suggest the features of either of dependent Claims 5 and 6, which recite that the inner peripheral surface of the frame is a mirror surface and a rough surface, respectively.

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<sup>4</sup> Outstanding Office Action, page 5.

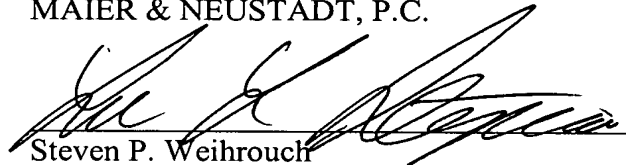
<sup>5</sup> Outstanding Office Action, page 5.

For the foregoing reasons, it is respectfully submitted that this application is in condition for allowance. A Notice of Allowance for Claims 1, 3-10, 12, and 15-18 is earnestly solicited.

Should Examiner Luu deem that any further action is necessary to place this application in even better form for allowance, he is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

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